

Mr. A. H. Toys.

September 27th, 1957.

Bridge Engineer.

Re: Foundation Report.

Materials & Research.

Underpass Bridge at Highway 401
Crossing County Road between Con-
cessions IV & V, 2 miles north of
Streetsville, Township of Toronto.
W. P. 43-57. H.J. P-57-11

Two copies of the above Foundation Report are enclosed
herewith for your use and information.

F. C. Brownridge.
Materials & Research Engineer.

per:



A. RUTKA.
Principal Soils Engineer.

c.c. Mr. H. Tregaskes.
Mr. C.G. Ramsay.
Mr. J.B. Wilkes.
Foundation Section.
File.

Foundation Report

on

Underpass Bridge at Highway 401

Crossing county road between Concessions

IV & V, 2 miles north of Streetsville,

Township of Toronto.

Plan No: F-3522-9

Station: 537 + 28.30

Distribution:

Mr. A. Toye
Bridge Engineer (2)

Mr. H. Tregaskes
Construction Engineer (1)

Mr. D. G. Ramsay
Design Engineer (1)

Mr. J. H. Wilkes
Dist. Eng. Toronto (1)

Foundation Section (1)

File (1)

E.P. 43-57

M.J. P-57-11

Introduction.

A subsoil investigation was carried out to determine the bearing values of the layers for supporting the foundations of the proposed structure.

The location is 2 miles north west of Streetsville where the new Highway 401, line "A", crosses county road between concessions IV and V, Township of Toronto, County of Peel, (profile no. F-3522-8, station 537/28.30). The work started on 18 August 1951 and was completed on 22 August 1957.

Procedure.

The investigations were carried out by means of a skit mounted coredrill machine. In the course of the explorations two boreholes with dynamic cone penetrations and two separate dynamic cone penetration tests were made.

The locations of the boreholes are shown in drawing no. F57-11A, and their elevations on log sheets under appendix 1.

Subsoil findings and Analysis.

The terrain is till plain. From the boring results the following stratigraphy was established.

Under the topsoil down to elevation about 614 feet the soil is gravelly brown clay till. Below this elevation down to bedrock (elevation 607 feet) the layer is mainly sand and gravel and some clay loam.

Due to the hard and bouldery nature of the soil only few undisturbed samples could be extracted. From these samples the soil was identified as inorganic and of low placticity. Its moisture content was measured to be 12%. No reliable unconfined compression tests could be carried out. The standard penetration tests during sampling yielded very high results, about 100 blows per foot penetration. However, the presence of boulders should be considered as a handicap in assessing values from

these tests.

The indications are that there is no underground water table, and the water level detected in the casings is perched water from washings and infiltration.

The bedrock was drilled by means of AXT bit and corebarrel samples were extracted. These samples proved the bedrock to be shale.

Conclusions and Recommendations.

From the above discussion it will follow that:

1. The terrain is till plain. The subsoil is brown, loamy clay till with boulders. Below elevation 614 the soil is mainly sand and gravel. Underlying these layers is shale bedrock.
2. The soil is convenient for spread footing type foundations. These footings could be placed at elevation about 620 ft. Here, the soil can provide a bearing value of 2.5 to 3.0 T.s.f. to support the foundations of the proposed structure.
3. The new grade line does not present any approach fill stability problem.

V. Korlu

Foundation Engineer

VK/JY.

APPENDIX I

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION BORE & PENET'N JOB F-57-11 WP. 43-57 BORING L STA. 536+88 (40' LT.)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT SEPT. 1957
SAMPLER HAMMER WT. 250 LBS. DROP 22 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 15 AUG. 1957

ABBREVIATIONS

V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMIABILITY
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING
QC - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT

SAMPLE TYPES

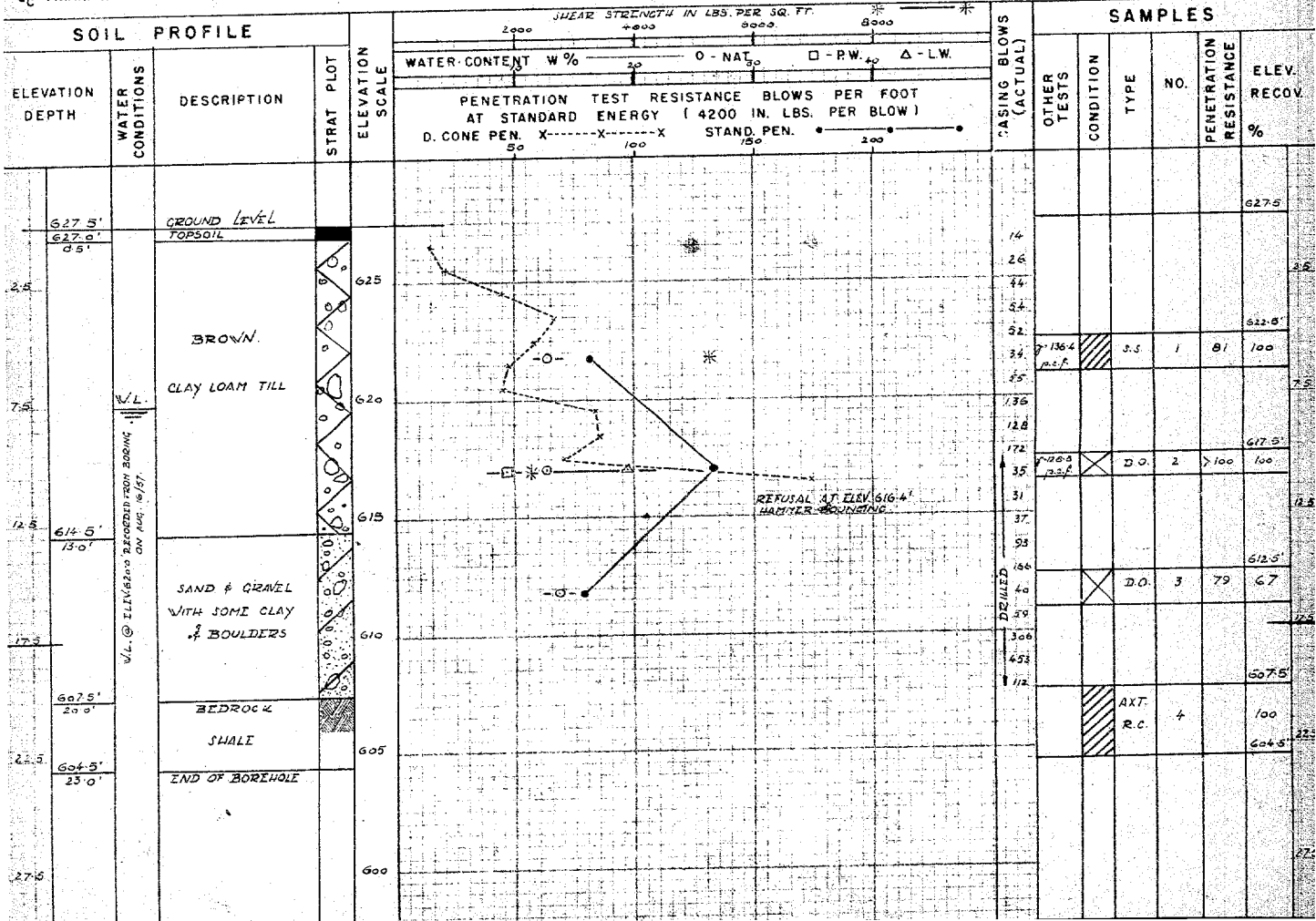
C.S. - CHUNK SS - SLEEVE SAMPLE
D.O. - DRIVE OPEN PS - PISTON SAMPLE
D.F. - DRIVE FOOT VALVE WS - WASHED SAMPLE
T.O. - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION



- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE



DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION PENETRATION JOB F-57-11 WP 43-57 BORING 2 STA. 536+96 (38) BT
 CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT JUPT 1957
 SAMPLER HAMMER WT. 250 LBS. DROP 22 INCHES COMPILED BY HJ CHECKED BY AL DATE BORING 17 AUG 1957

ABBREVIATIONS

V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMIABILITY
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SAMPLE TYPES

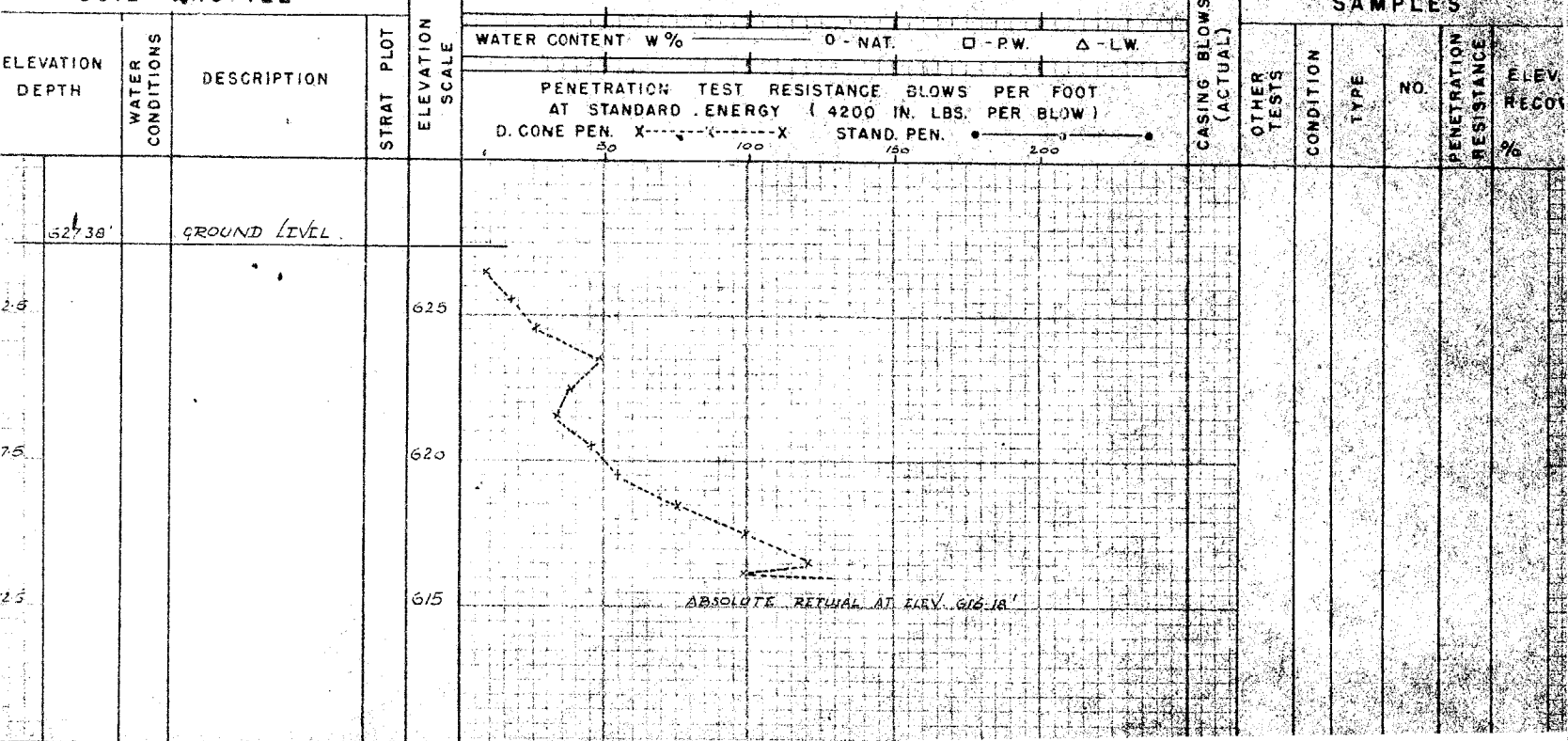
C.S. - CHUNK S.S. - SLEEVE SAMPLE
 D.O. - DRIVE OPEN P.S. - PISTON SAMPLE
 D.F. - DRIVE FOOT VALVE W.S. - WASHED SAMPLE
 T.O. - THIN WALLED OPEN R.C. - ROCK CORE

SAMPLE CONDITION



- DISTURBED
 - FAIR
 - GOOD
 - LOST

SOIL PROFILE



DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION PENETRATION JOB F-57-11 W.P. 43-57 BORING 3 STA. 537+81 (39' LT.)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT SEPT. 1957
SAMPLER HAMMER WT. 250 LBS. DROP 22 INCHES COMPILED BY HJ CHECKED BY DATE BORING 19 AUG. 1957

ABBREVIATIONS

ABBREVIATIONS

| | | |
|----------------------------------|----------------------------|------------------------|
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| M - MECHANICAL ANALYSIS | S - TRIAXIAL SLOW | C - CONSOLIDATION |
| U - UNCONFINED COMPRESSION | WL - WATER LEVEL IN CASING | CA - CASING |
| QC - TRIAXIAL CONSOLIDATED QUICK | WT - WATER TABLE IN SOIL | γ - UNIT WEIGHT |

SAMPLE TYPES

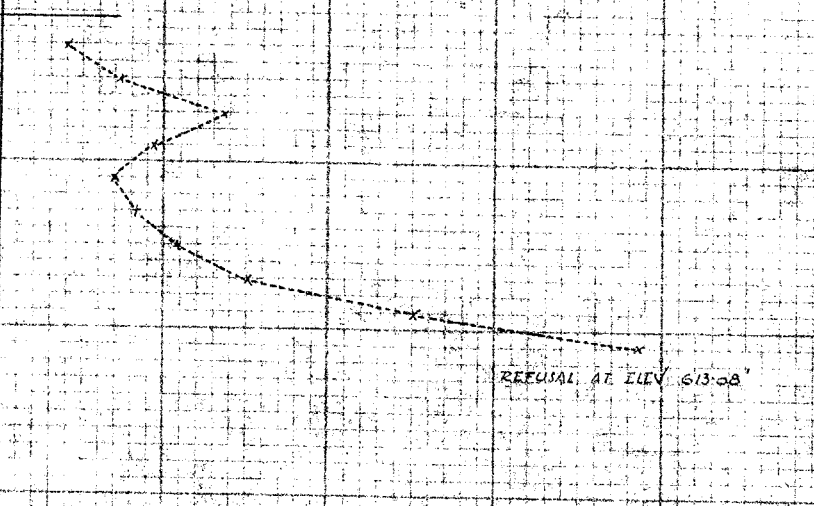
| | |
|-------------------------|----------------------|
| C.S. - CHUNK | S.S. - SLEEVE SAMPLE |
| D.O. - DRIVE OPEN | P.S. - PISTON SAMPLE |
| D.F. - DRIVE FOOT VALVE | W.S. - WASHED SAMPLE |
| T.O. - THIN WALLED OPEN | R.C. - ROCK CORE |

SAMPLE CONDITION



- DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

| ELEVATION DEPTH | | WATER CONDITIONS | DESCRIPTION | STRAT PLOT | ELEVATION SCALE | WATER CONTENT W % | | | O - NAT. | □ - P.W. | △ - L.W. | CASING BLOWS (ACTUAL) | OTHER TESTS | CONDITION | TYPE | NO. | PENETRATION RESISTANCE | ELEV. RECOV | | | | | | | | | |
|--------------------|--------|---------------------|--------------|------------|--------------------|---|-----|-----|--|----------|----------|--------------------------|----------------|-----------|------|-----|---------------------------|----------------|--|--|--|--|--|--|--|--|--|
| | | | | | | PENETRATION TEST RESISTANCE BLOWS PER FOOT AT STANDARD ENERGY (4200 IN. LBS. PER BLOW) | | | D. CONE PEN. X-----X-----X STAND. PEN. ●-----●-----● | | | | | | | | | | | | | | | | | | |
| 1 | 2+ 2B' | | GROUND LEVEL | | | 50 | 100 | 150 | 200 | | | | | | | | | | | | | | | | | | |
| 2.5 | | | | | 620 |  | | | | | | | | | | | | | | | | | | | | | |
| 9.5 | | | | | 615 | REFUSAL AT ELEV 613.08 | | | | | | | | | | | | | | | | | | | | | |
| 14.5 | | | | | 610 | | | | | | | | | | | | | | | | | | | | | | |

DEPARTMENT OF HIGHWAYS - ONTARIO
 MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION BORE & PENET'N JOB F-57-11 WP 43-57 BORING 4 STA. 537+62 (44'27")
 CASING BX (standard samplers to fit unless noted) DATUM QUODETIC DATE REPORT SEPT. 1957
 SAMPLER HAMMER WT. 250 LBS. DROP 22 INCHES COMPILED BY H.S. CHECKED BY A.L. DATE BORING 19 AUG. 1957

ABBREVIATIONS

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SAMPLE TYPES

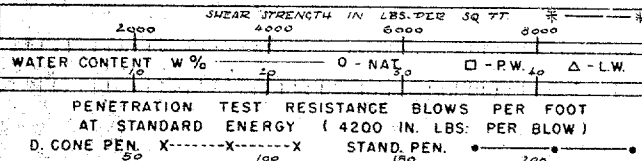
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 DO - DRIVE OPEN PS - PISTON SAMPLE
 DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
 TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION



- DISTURBED
 - FAIR
 - GOOD
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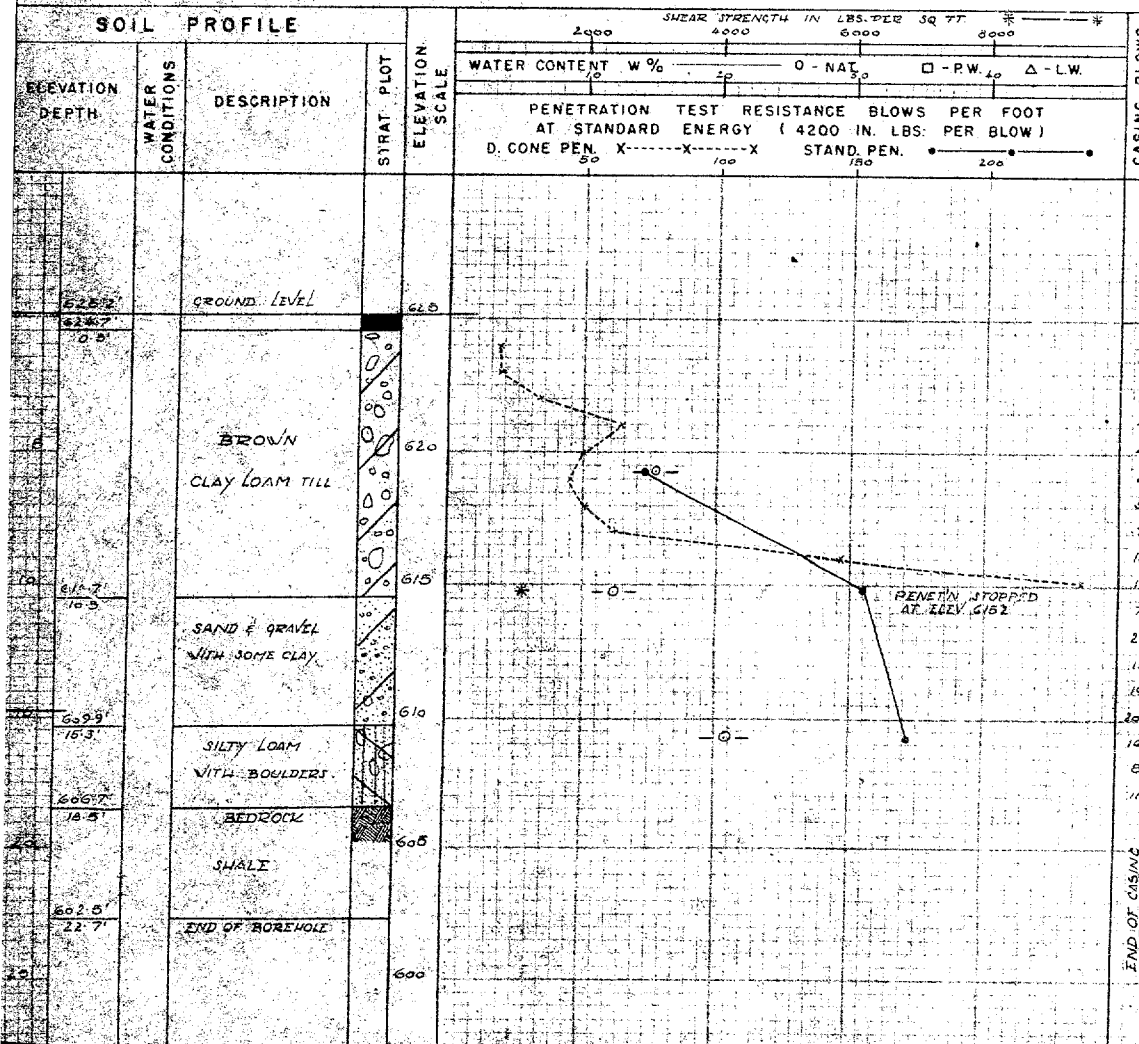
SOIL PROFILE



SAMPLES

| CASING BLOWS (ACTUAL) | OTHER TESTS | CONDITION | TYPE | NO. | PENETRATION RESISTANCE | ELEV. RECOV. |
|-----------------------|---------------|-----------|-----------|-----|------------------------|--------------|
| | | | | | % | |
| 14 | | | | | | 625'2" |
| 22 | | | | | | |
| 39 | | | | | | |
| 47 | | | | | | 620'2" 5 |
| 41 | | | | | | |
| 26 | | SS | 1 | 74 | | |
| 50 | | | | | | |
| 76 | | | | | | |
| 134 | | | | | | 615'2" 10 |
| 132 | | | | | | |
| 77 | 7.273 n.f. | | D.O. | 2 | >100 | 100 |
| 276 | | | | | | |
| 153 | | | | | | 610'2" 15 |
| 198 | | | | | | |
| 200 | | | | | | |
| 162 | | | D.O. | 3 | >100 | 80 |
| 87 | | | | | | |
| 110 | | | | | | 605'2" |
| | | | AX7 RC | 4 | | 20 |
| | | | | | | 90 |
| | | | | | | 602'5" |
| | | | | | | 25 |

END OF CASING @ 607'2"



57-F-11
W.P.# 43-57
Hwy. # 401
UNDERPASS BRIDGE
COUNTY RD. 2
MILES N. OF
STREETSVILLE

EDITED
FOR MICROFILMING
BY..... DATE.....

